

*Oracle America v. Google - Expert Report of Iain Cockburn - September 12, 2011 (Rev. Sept. 15) - Subject to Protective Order  
(Contains Confidential and Highly Confidential/Attorneys' Eyes Only Material)*

**IN THE UNITED STATES DISTRICT COURT  
FOR THE NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION**

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ORACLE AMERICA, INC.

Plaintiff,

v.

GOOGLE, INC.

Defendant.

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Case No. 3:10-CV-03561-WHA

**EXPERT REPORT OF DR. IAIN M. COCKBURN**

**September 12, 2011 – ATTORNEYS' EYES ONLY**

**Revised September 15, 2011**

16. My analysis is guided by the context in which the hypothetical negotiation for that intellectual property takes place. In particular, I am guided by a number of core propositions that emerge from my review of the evidence:

- Android is of enormous financial and strategic importance to Google, not only providing substantial net advertising and other revenue directly related to Android, but playing a crucial strategic role for Google as a whole by ensuring that Google search and other profitable services are not “locked out” of the increasingly crucial mobile marketplace by mobile platform competitors with search and advertising interests of their own.
- Sun’s intellectual property has been key to the success of Android, as evidenced by Google’s repeated statements—from 2005 through 2010—that it had no alternatives and needed to take a license to the Java runtime from Sun.
- The speed, memory, and application support provided by the patents and copyrighted expression in suit provide substantial value to Android
- Google recognized the need for a Java license from almost the moment it acquired Android, but instead chose to infringe Sun’s and now Oracle’s intellectual property and gamble against a lawsuit, further demonstrating the value of what Google took.
- Google’s decision not to take a license, but instead to implement Android in a way that simultaneously uses the Java patents and copyrighted expression at issue and does so in an incompatible way, significantly harmed Sun and will continue to harm Oracle by removing major revenue opportunities and will harm Oracle for the long-term through fragmentation of Java.

### **1. Starting Point for Patent Damages**

17. I calculate damages from patent infringement based on my assessment of a reasonable royalty arising from a hypothetical negotiation for a license that would enable the infringement. To do this, I identify a starting point for the negotiations based on proposals made by both Sun and Google for a related (though significantly different) agreement, apportion royalties to isolate the contribution of the patents-in-suit, make various adjustments to the starting point to align it with the economic harm to Sun arising

**Chart 1 – Starting Point of \$100, based on Armstrong Negotiations (in \$ mil)**

		2007	2008	2009	2010	2011	TOTAL 07 - 11
Fixed Payment Per Licensing Terms	≥	\$20.0	\$20.0	\$20.0	\$0.0	\$0.0	<b>\$60.0</b>
10% Revenue Share with cap	≥	\$0.0	\$0.1	\$1.6	\$12.0	\$25.0	<b>\$38.7</b>
<b>Starting Point</b>	≥	\$20.0	\$20.1	\$21.6	\$12.0	\$25.0	<b>\$98.7</b>

24. Payment of this amount to Sun over three years can be translated to an effective (ex post) royalty rate of approximately \$0.58 per Android handset, based on the actual or projected sales of Android handsets through 2011. This is consistent with Sun's pricing and other licenses for Sun's Java ME technologies, as discussed in Section IV. Given Android was expected to be a new smartphone platform, with richer functionality than most previous Java ME-based devices, the royalty for Android likely would have been significantly higher.

## **2. Apportionment for Patent Contribution**

25. I next apportion the Starting Point Royalty to isolate the amount of the portfolio-based licensing agreement under discussion that should be attributed to the seven patents-in-suit. As summarized below and explained in more detail later in this report, it is my opinion that 30% represents a lower bound for apportionment of the portfolio-wide value attributable to the patents-in-suit. Applying this lower bound, I conclude that at least \$29.6 million of the \$98.7 million starting value is attributable to the patents-in-suit. The calculations are reflected in Exhibit 3.

26. A number of different assessments shed light on the contributions of the individual patents-in-suit, and in turn the amount of the starting point that should be apportioned those patents. These include the contemporaneous evidence and the engineering evidence as to the significant performance improvements enabled by the patented technology, both of which suggest that a substantial portion of a Java portfolio license should be apportioned to the patents-in-suit. Google's internal documents at and around the time of the hypothetical negotiation make clear that speed and memory were critical attributes for Android. For example:

Embedded is all about doing more with less. If it is not approached that way, you get terrible, slow, unusable systems. It's not pretty. Every cycle of work you do is further reduction of battery life. . . . Smaller, simpler, faster, more reliable wins.”<sup>24</sup>

Every test and every survey indicates that speed is one of the most important ‘features’ of a product; even milliseconds in response time seem to matter.<sup>25</sup>

27. In turn, the Oracle engineers’ benchmark testing, coupled with Professor Kemerer’s report and other evidence, make clear that the patents-in-suit were integral to addressing Google’s need for speed and efficient memory utilization. The tests showed that the features provided by the patents-in-suit substantially increase application execution speed on Android devices (as much as 13 times faster for some of the patented features), save memory by as much as 40%, and prolong battery life.

28. In addition, analysis of consumer demand shows that the improvements provided by the patents-in-suit, together and separately, are highly significant. I have applied two empirical analyses of user demand to assess the incremental value of the patents-in-suit. I refer to these as the Econometric Analysis and the Conjoint Analysis.

29. Both analyses are rooted in quantitative assessment of the specific contribution of the patents-in-suit to Android’s success in generating revenues as distinct from the contributions of other factors. Comparing that contribution to the overall contribution of the Java portfolio to the revenue generated by Android compared to the revenue Google would earn if all usage was shifted to non-Android platforms, I am able to generate additional data points as to the percentage of the portfolio value that is attributable to the patents-in-suit. These analyses contribute to my overall 30% conclusion.

30. The econometric analysis models consumer demand to understand the incremental value of the patents-in-suit, and the conjoint analysis measures the value of the feature enhancement associated with the patents-in-suit based on a consumer survey

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<sup>24</sup> GOOGLE-01-00082292 (E-mail from Brian Swetland to Rubin and others, August 9, 2007)

<sup>25</sup> GOOGLE-10-00045531 at 538 (Eric Schmidt strategy documents, 2006-2008)

conducted by Professor Shugan. Both studies find that consumers value the performance features enabled by the patents and that without these patent-enabled features, Android's market share would be significantly lower. I then evaluate the impact of Google's use of the patented technologies on Google's incremental advertising revenues from Android devices.<sup>26</sup> To assess the contribution of the patents-in-suit, I divide the incremental advertising revenues driven by the patents-in-suit – as calculated under both analyses – by the total incremental advertising revenues that Google earns because of Android (factoring in that it would have earned some even if it did not launch Android). The Econometric Analysis suggests that at least 30 to 40% of that incremental revenue is driven by four of the seven patents-in-suit (the '104, '205, '702, and '720), and the Conjoint Analysis suggests that at least 23 to 39% of the incremental advertising revenue is driven by three of the seven patents-in-suit (the '104, '205, and '720).

31. Although neither of these two analyses measures the value of all seven patents-in-suit, or otherwise captures the full value of all the patents-in-suit, they each provide a helpful indicator for apportioning the value. The results of these two analyses are significant because they corroborate contemporaneous evidence showing that Google considered speed, memory and multitasking—performance attributes enabled or enhanced by the patents-in-suit—to be crucial drivers of demand for Android. As described by Professor Mitchell, the security patents ('447 and '476) also contribute value because they complement the other patents and prevent Google from developing otherwise potentially-available workarounds. Indeed, the absence of non-infringing alternatives, both for the specific patents-in-suit and for Java technology as a whole as used in Android, reinforces my conclusion as to the apportioned value of the patents-in-suit.

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<sup>26</sup> I calculate the incremental advertising revenues from Android devices as the difference between Google's advertising revenues from Android devices and the amount that Google would have earned without Android (i.e., assuming Google did not develop Android at all, and instead distributed advertising and other services entirely through other platforms).

32. I provide an overview by patent of these considerations, including the contemporaneous and benchmarking evidence in Exhibits 6 to 12. Given the weight of this evidence, it is my opinion conclusion that at least 30% of the Java portfolio value is attributable to the patents-in-suit, taken together. (I analyze in Section XII below each of the patents' *individual* contributions.)

33. The application of the downward adjustment of the starting point for patent apportionment is summarized as follows:

		2007	2008	2009	2010	2011	TOTAL 07 - 11
Starting Point	≥	\$20.0	\$20.1	\$21.6	\$12.0	\$25.0	\$98.7
Patent Apportionment (30%)	≤	\$(14.0)	\$(14.1)	\$(15.1)	\$(8.4)	\$(17.5)	\$(69.1)

34. As discussed below, I apply the same apportioned value (at least 30%) to the adjustments I make to the starting point value.

### 3. Upward Adjustments for Patent Damages

35. Having identified the minimum portion of the Starting Point Royalty that is attributable to the patents-in-suit, I consider additional adjustments that are necessary, including those warranted under *Georgia-Pacific*. These adjustments take into account significant differences between the compatible Starting Point license and the incompatible hypothetical license that would permit the infringement, and by so doing, attempts to adequately compensate Sun for the economic consequences of infringement, thus making Sun willing to agree to the terms of the hypothetical license. Consideration of these differences leads to a series of at least three potential upward adjustments (each subject to the same apportionment adjustment discussed above) to the Starting Point Royalty in order to get to an appropriate hypothetical license royalty:

- Adjustment for harm to Sun, in the form of foregone licensing revenues and conveyed sales that Sun expected to generate pursuant to the “starting point” license, as a result of the fact that the starting license would have permitted Google to undertake only a *compatible* implementation of Java ME and would have permitted Sun to share in *control* over Android, whereas the hypothetical license—which compensates Sun for the “use made of the invention by the

infringer”—would be for an *incompatible* implementation over which Sun had *no control*. This fundamental difference eliminated Sun’s ability to realize profits from licensing of the patents-in-suit and other intellectual property and to benefit from convoyed sales relating to Android (part of *Georgia Pacific* Factor 6). It also converted the license from an arrangement in which Sun and Google were *partners* in Android to one in which they are *competitors* (*Georgia Pacific* Factor 5), giving all the benefit of the license to Google (part of *Georgia Pacific* Factor 6, as well as Factors 10 and 11).

- Adjustment for the effect of fragmentation on non-mobile Java revenues portended by infringement of the patents-in-suit, given their prominence within the Java environment and the lack of non-infringing substitutes for them. Such adjustment is warranted by the same *Georgia Pacific* factors that warrant the previous adjustment, though the fragmentation effect (harm across existing Sun Java platforms as a result of diversion of application developers to an incompatible Android, and loss of the core “write once, run anywhere” promise that draws developers to Java) is distinct from and cumulative to the control/compatibility effect (loss of revenue opportunities in the mobile platform space as a result of lack of control and compatibility).
- A “litigation premium” which, as recognized by the Court, reflects the fact that the starting license was negotiated before the patents-in-suit were found to be valid and infringed.

36. The first adjustment (control/compatibility) warrants a significant upward adjustment to the Starting Point Royalty. Based on the contemporaneous evidence, this adjustment warrants an increase in the annual fee component to reflect harm to Sun each year from lost sales it had otherwise anticipated to make, and an extension of that fee beyond the first three years following June 2006. This adjustment adds at least \$167 million. I also include an additional upward adjustment: an increase in Sun’s share of Google’s advertising revenues by removing the \$25 million annual cap on the 10% revenue share. (Indeed, adding the 10% revenue share as a whole would readily be warranted by the upward adjustment factors if it were not in the “starting point” at all.)

37. The second adjustment (fragmentation) warrants substantial upward pressure on the Starting Point Royalty. I note that concerns about fragmentation drove Sun’s successful pursuit of a Java patent license by Microsoft in 2004 for a \$900 million payment, additional royalties over time, and a cross-license to Microsoft intellectual

property.<sup>27</sup> The great significance of fragmentation in the hypothetical negotiation is confirmed by two significant considerations: (1) the strenuousness of Sun's concerns about fragmentation expressed in the "starting point" negotiations (which, had they been concluded, would have minimized fragmentation by resulting in a compatible Android instead of the incompatible one on which the hypothetical royalty is based) and (2) the extraordinarily high value of Java and Java platforms to Sun.

38. However, the harm from fragmentation is difficult or impossible to quantify precisely with the available data, is likely irreparable, and therefore not fully or adequately captured by the reasonable royalty. Moreover, it is my opinion that the potentially quantifiable harm from fragmentation is only now beginning to take shape (proportionate to the momentum of the incompatible Android), and is most likely to be suffered in the future. I leave this factor unquantified.

39. The third adjustment (litigation premium) warrants upward pressure on the apportioned Starting Point Royalty. Published studies suggest that the "litigation premium" could be as high as 100%.<sup>28</sup> However, I am not able to quantify precisely the impact of this adjustment in this case.

40. As a result, my estimates of upward adjustments do not reflect the full value of the patents-in-suit. The quantified upward adjustments are as follows:

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<sup>27</sup> Deposition of Mark B. Reinhold, PH.D (30(b)(6)), *Oracle America, Inc., v. Google, Inc.*, No. 10-03561 WHA, United States District Court, Northern District of California, August 5, 2011, at 79:5-82:6.

<sup>28</sup> Sherry, Edward F. and Teece, David J., "Royalties, Evolving Patent Rights, and the Value of Innovation," *Research Policy*, Vol. 33 (2004), pp. 179-191. See also: Kerr, William O. et al, "Comparison of Litigated and Non-Litigated Licenses," *Patent Infringement Damages: Statistics & Trends \* 1990 – 2004*, pp. 73-77.



separately and together, to Android. These factors, summarized in Exhibits 6 to 12, inform my overall assessment of the individual apportioned values of each of the patents-in-suit. Estimates of patent damages on an individualized basis for each of the seven patents-in-suit are shown in these same exhibits.<sup>33</sup>

## **8. Estimated Copyright Damages**

52. I also estimate copyright damages. My understanding is that copyright damages consist of the copyright holder's actual damages caused by the infringement, plus any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages.

53. I calculate actual damages based on (a) Sun's lost profits caused by Google's copyright infringement (again subject to apportionment), including both lost profits from Sun's termination of its smartphone platform plans (Project Acadia) as a result of the release of Android, and to the extent Acadia and Java ME represented different sources of revenues (i.e., Acadia would not have materially impacted Java ME revenues), lost Java ME profits caused by Google's use of the copyrighted materials; or (b) a hypothetical license negotiation along the lines described above (with a separate adjustment for apportionment to account for the unique value of the copyrights, but no adjustment for non-United States infringement, based on instruction from counsel regarding applicable law).

54. Sun's lost profits also include the lost non-mobile profits resulting from Android's fragmenting of Java, but as noted above these lost profits cannot be fully quantified. I estimate that the recoverable lost profits are about \$136.2 million, and that (alternatively) the royalty paid under a hypothetical license apportioned to reflect the contribution of the copyrighted IP to the total value of Android is approximately \$102.6.

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<sup>33</sup> I understand that Oracle has already reduced the number of patent claims at issue in this case, and that this number may well be triable to a jury on the schedule set by the Court. If Oracle further reduces the number of claims, or any claims are removed for any other reason, any necessary adjustments to the calculations and analyses set forth in this report could be made to the extent required to reflect any associated change in value.

55. With respect to infringer's profits, it is my understanding that under the copyright damages statute, the copyright holder may recover any profits of the infringer that are attributable to the infringement and are not taken into account in computing the actual damages.<sup>34</sup> I further understand that, under the statute, Oracle is required to "present proof only of the infringer's gross revenue, and the infringer is required to prove his or her deductible expenses and the elements of profit attributable to factors other than the copyrighted work."<sup>35</sup> I understand from counsel that the law recognizes that recoverable profits may be direct or indirect, and that indirect profits are those earned not by selling an infringing product, but rather earned from the infringer's operations that were enhanced by the infringement.<sup>36</sup> Notwithstanding the potential breadth of that provision, I calculate only the gross revenue earned from Android-based advertising, sales of Nexus smartphones, and sales of applications on Android Market (approximately \$823.9 million through 2011), and do not include additional Google revenue streams that have been or may be materially enhanced by Android and the infringement.

56. In sum, my estimates of each component of copyright damages (subject to reduction to the extent infringer's profits and actual damages overlap as determined by the jury) are as follows:

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Infringer's Profits	\$ 823.9M
Lost Fair Market Value License Fee	\$ 102.6M
Lost Profits	\$ 136.2 M

## **9. Royalty For Potential Future Patent and Copyright Infringement**

57. In its July 22, 2011, Order, the Court made clear that "any damages report should address both the assumption that an injunction will be granted *and* the assumption that an injunction will not be granted," and that "any projection of future damages must take into account the varying expiration dates of the asserted patent claims."

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<sup>34</sup> 15 U.S.C. § 504(b).

<sup>35</sup> *Id.*

<sup>36</sup> *Mackie v. Rieser*, 296 F.3d 909, 914 (9th Cir. 2002); *also William A. Graham Co. v. Haughey*, 568 F.3d 425, 442 (3d Cir. 2009).

58. The estimated reasonable royalty calculated in this report through the time of trial does *not* include compensation for any gain or loss after the time of trial. This is true even though, in my opinion, there are necessarily continuing consequences of the infringement that will occur in the future even if all infringement stops at the time of trial. Such consequences include the fact that Google has used the infringed patents and copyrights as part of a concerted effort to tap the ecosystem of Java developers, providing Android with substantial time to market advantages and momentum that it is likely, given the strong network effects associated with platform products, to continue *even if* the infringement stops or *even if* Google, confronted by an injunction, is able to pivot away from Java altogether. Only because of the infringement that has already occurred would Google be able to pivot to a non-infringing alternative, because now that it has obtained the momentum and a market leadership position, it can carry along existing Android developers rather than relying entirely on recruiting a base of developers *de novo*.

59. In my opinion, awarding a royalty for future infringing conduct would not be sufficient to compensate Oracle for either the continuing consequences of Google's past infringement or the full value of the infringement if it continues into the future. For example, as discussed above, the future harm from fragmentation (attributable to the infringed patents) of Java caused by the continued presence of an infringing, non-compatible version of Java on the market, both carried forward from the infringement to date and as the likely result of any future infringement, is likely to be irreparable. Carrying forward the structure of the original patent hypothetical negotiation would result in a projected royalty of \$203.1 million for 2012 alone. Carrying forward the structure of the original copyright hypothetical negotiation would result in a projected royalty of \$102.6 million for 2012 alone. Those sums would not adequately capture the value of the harms Oracle would continue to suffer.<sup>37</sup>

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<sup>37</sup> The projected royalty of \$203.1 million is based on simple calculation giving Sun: a 3% share of Google's U.S. mobile advertising revenue, based on Google's internal projection; and lost licensing revenues from Project Armstrong, projected to increase in its fourth year. The projected royalty of \$102.6 million is based on simple calculation giving Sun: a 1.5% share of Google's mobile advertising

69. As emphasized throughout this report, it is important to understand that Sun's standard Java licenses and the "starting point" are distinguishable in a number of important ways, and I have accounted for those differences in this report. One important distinction is the compatibility requirements that exist in Sun's Java licenses and would have applied with the starting point, together with other ways in which Sun's Java licenses allow Sun a degree of control over licensees subsequent modification or distribution of Java.

70. Among the other licenses entered into by Sun, I have also considered the agreements entered into between Sun and Microsoft in 2004, under which Microsoft agreed to pay Sun a total of well over \$1 billion.<sup>38</sup> Those agreements confirm the importance of compatibility to Sun, as Sun fought to prevent Microsoft from developing and distributing its own version of Java.<sup>39</sup>

71. Sun alleged that Microsoft had, with its incompatible Java Virtual Machine, "embarked on a deliberate course of conduct in an attempt to fragment the standardized application programming environment established by the Java technology, [and] to break the cross-platform compatibility of the Java programming environment."<sup>40</sup> In resolving that case against Microsoft, Sun negotiated a \$900 million payment to resolve certain patent issues, with additional payments totaling \$450 million for any future use.<sup>41</sup> This lawsuit demonstrates Sun's abiding concern with protecting against

<sup>38</sup> <<http://www.microsoft.com/presspass/press/2004/apr04/04-02sunagreementpr msp.aspx>>.

<sup>39</sup> "Sun, Microsoft settle Java suit," CNET News, January 23, 2001, accessed at <<http://news.cnet.com/2100-1001-251401.html>>; *Sun Microsystems, Inc. v. Microsoft Corp.*, No. C-97-20884 RMW (N.D. Cal.); *Sun Microsystems, Inc. v. Microsoft Corp.*, No. C-02-01150 RMW (N.D. Cal.).

<sup>40</sup> Complaint for: trademark infringement; false advertising; breach of contract; unfair competition; interference with prospective economic advantage inducing breach of contract, *Sun Microsystems Inc. v. Microsoft Corp.*, United States District Court Northern District Of California San Jose Division, October 7, 1997, accessed at <<http://home.dti.net/bdpc/java.htm>>.

<sup>41</sup> On April 5, 2004, Sun and Microsoft announced that they had entered into a technology collaboration arrangement and settled all pending litigation. The agreements involve payments of \$700 million to Sun by Microsoft to resolve pending antitrust issues and \$900 million to resolve patent issues. Microsoft agreed to an upfront payment of \$350 million for use of unspecified Sun technologies, and may make an additional \$450 million in annual payments to extend the covenant for up to 10 years. "Sun Deal Signed, Litigation Ends," *Directions on Microsoft*, April 12, 2004, accessed at

fragmentation, and the eventual settlement helps frame the value of fragmentation in the hypothetical license framework here.

**Factor 2 (*not a significant source of upward or downward royalty pressure*): The rates paid by licensee for the use of other patents comparable to the patent-in-suit.**

72. I have not seen any evidence that Google has licensed “patents comparable” to the patents-in-suit, or licenses copyrights comparable to the copyrights-in-suit. I understand that Sun requested and Google produced a small number of licenses,<sup>42</sup> and it is my opinion that none of those licenses are comparable or would otherwise be relevant under this factor.

73. The licenses produced by Google at most provide basic information about Google’s licensing practices for certain mobile patents. For instance, all but one of the six licenses are “worldwide” licenses. In 2006, Sun and Google were also negotiating a worldwide license. Nonetheless, consistent with the Court’s directions, I have allocated damages so that they are limited to infringement in the United States.

74. It is my opinion that the negotiations over a license for Java that took place between Sun and Google, as described in Section IV, provide a better starting point than any of the licenses produced by Google because it contemplated a release under some open source license, which is what happened with Android, and I am not aware of any other licenses entered into by Sun that permitted that. Consistent with the Court’s directions, I have focused on those negotiations in this report, and then made various adjustments.

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<<http://www.directionsonmicrosoft.com/sample/DOMIS/update/2004/05may/0504sdsle.htm>>. See also Sun Microsystems, Inc. Form 10-K for fiscal year ended 2004, Exhibit 10.108 (Microsoft/Sun Alliance Technical Collaboration Agreement), at p. 9 and Sun Microsystems, Inc. Form 10-K for fiscal year ended 2004, Exhibit 10.109 (Limited Patent Covenant and Stand-Still Agreement), at p. 5.

<sup>42</sup> See GOOGLE-00-00000031-036; GOOGLE-00-00000037-048; GOOGLE-00-00000049-59; GOOGLE-00-00000693-720; GOOGLE-00-00000721-730; GOOGLE-00-00000731-742.

102. For one, there have been public reports regarding a license that was entered into between Microsoft and HTC. According to one analyst estimate, HTC agreed to pay Microsoft between \$20 and \$40 per handset for Microsoft patented technologies in Droid Incredible.<sup>53</sup> This provides some indication of the potential value of patents for mobile platforms generally and for Android in particular.

103. Recently, it has been reported that Nokia agreed to pay Microsoft \$7 to \$10 per handset for use of Microsoft's mobile operating system, or \$6 to \$9 billion over a five-year period.<sup>54</sup> Although that operating system differs from the one at issue here, the license fee reflects the substantial value of a smartphone operating system, and provides some indication of the value of the patents-in-suit in this case as a component of the Android platform.

104. I have also considered other agreements relating more broadly to the value of intellectual property associated with mobile devices and services. Though not directly comparable to a license to aspects of a smartphone operating system, these transactions are nonetheless informative about the magnitude of profits associated with mobile devices and services and of related royalties. One such agreement was entered into between Qualcomm Inc. ("Qualcomm") and Nokia Corporation/Nokia Inc. ("Nokia") in or before January 2009. In a proxy statement filed with the SEC, Qualcomm reported that it and Nokia entered into new license and settlement agreement covering various wireless technologies and stated: "Consideration provided to us under the new license agreement with Nokia included, among other things, a non-refundable upfront payment of \$2.5 billion, ongoing royalties and the assignment of patents that we recorded in intangible assets in the amount of \$1.8 billion." In fiscal years 2007 and 2008, Qualcomm recognized royalties from this deal totaling \$560 million.<sup>55</sup>

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<sup>53</sup> "Smartphones Are the Latest Patent Battleground," Bloomberg Businessweek, May 12, 2010, accessed at <[http://www.businessweek.com/technology/content/may2010/tc20100512\\_956709\\_page\\_2.htm](http://www.businessweek.com/technology/content/may2010/tc20100512_956709_page_2.htm)>.

<sup>54</sup> Morgan Stanley, "MSFT & NOK Make It Official, Sign Partnership Deal," April 21, 2011.

<sup>55</sup> Qualcomm Incorporated, Proxy Statement filed with SEC, March 3, 2009, pp. A-6, A-14.

105. Various other mobile-related licenses and agreements also demonstrate, generally, the substantial value of mobile-related patents and technologies. For example, Nokia has indicated that it expected to charge a royalty of 1.5% of the sales price for single-mode LTE (4G) devices.<sup>56</sup> Handset OEMs also reportedly pay 3.25 to 5% of the average wholesale selling price of 3G and 4G handsets in royalties to Qualcomm.<sup>57</sup> Assuming the handset ASP [average sales price] is \$300-500, that equates to approximately \$15 to over \$30 per handset. Apple has been reported to pay around \$50 in royalties for every iPhone sold.<sup>58</sup>

**Factor 13 (*warrants downward adjustment of starting point*): The portion of the realizable profit that should be credited to the invention as distinguished from non-patented elements, the manufacturing process, or business risks, or significant features or improvements added by the infringer.**

106. As discussed above, the patents-in-suit provide critical features and functionality to Android. Based on analysis of the contemporaneous evidence, the testing of Oracle engineers, and my analyses of the impact of the enhancements provided by the patents-in-suit on demand, I conclude that approximately 30% of the Aggregate Hypothetical License is properly attributable to the patents-in-suit.

107. I have conducted an extensive set of analyses to determine the incremental value provided to Google by the patents-in-suit over and above any profit attributable to other Google technology, or to Google's business acumen, resources, search technology or other potential drivers of value. By focusing on *incremental* Google profits from mobile distribution that result from Android, my analysis excludes any contribution from value drivers that are independent of Android. I then apportion the royalty downwards so

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<sup>56</sup> <<http://www.nokia.com/press/ipr-information/statement/nokia-licensing-policy-on-long-term-evolution-and-service-architecture-evolution-essential-patents>>.

<sup>57</sup> Moritz, Scott, "Qualcomm Teed Up for Verizon Phone," The Street, January 26, 2011, accessed at <<http://www.thestreet.com/story/10985798/1/qualcomm-teed-up-for-verizon-iphone.html>>.

<sup>58</sup> "Apple: Impact of Patent Infringement Case on Stock," The Street, December 8, 2010, accessed at <<http://www.thestreet.com/story/10942240/apple-impact-of-patent-infringement-case-on-stock.html>>.



as to credit the patented inventions only with that portion of the incremental Android profits specifically attributable to the features that they enable.

**Factor 14 (*supports estimated royalty*): The opinion testimony of qualified experts.**

108. I have reviewed the expert reports of Professors Mitchell, Shugan, and Kemerer, as well as others prepared in connection with this lawsuit. I offer no opinion as to the expertise of any other expert, but I have carefully considered aspects of the reports of each of the experts in this case, including experts retained by Google, and I cite and discuss portions of those reports throughout this report. In general, the reports by both Professor Mitchell and certain experts retained by Google confirm the importance of the intellectual property at issue in this lawsuit and Google's lack of alternatives.

109. I also take into account the work of Professor Shugan with respect to survey evidence of the importance of the feature enhancements associated with the patents-in-suit.

**Factor 15 (*supports overall estimated royalty, including willingness to pay analysis*): The amount that a licensor (such as the patentee) and a licensee (such as the infringer) would have agreed upon (at the time the infringement began) if both had been reasonably and voluntarily trying to reach an agreement; that is, the amount which a prudent licensee—who desired, as a business proposition, to obtain a license to manufacture and sell a particular article embodying the patented invention - - would have been willing to pay as a royalty and yet be able to make a reasonable profit and which amount would have been acceptable by a prudent patentee who was willing to grant a license.**

110. In general, in a negotiation for the hypothetical license, Sun would have sought a payment from Google that was no less than the amount that Sun would have reasonably expected to lose as a result of the infringement, and Google would in turn not want to pay any more than it reasonably expected to gain from the infringement. My calculations do not fully quantify all expected losses (such as fragmentation) or all



211. The April 19, 2006 draft agreement included a payment amount, which appears to have been added by Sun: “Twenty-Eight Million Dollars (\$28,000,000) to be paid in three installments ... [Proposal based on agreement on Section 13.1].”<sup>243</sup> In Section 13.1 of the April 19 draft agreement, titled Go To Market Plan, Sun wrote: “[Need to discuss. We propose agreement to the price in return for Sun’s hosting & ISV leadership.]”<sup>244</sup>

212. This and other evidence indicates that the payment terms were still under negotiation as of the date of this last proposal, and that Sun was seeking additional specific benefits in exchange for an agreement to a \$28 million payment. Google’s response to that proposal confirms that the payment terms were still under negotiation, stating “Payment time needs to be tweaked” and “Google needs to host the source repository and bug tracking systems. We’re okay with Sun managing ISV program.”<sup>245</sup> The value placed by the respective parties on hosting is unclear from the record evidence, but it is clear that the terms were still under negotiation.

213. Just the day before, on April 18, 2006, Gupta sent a summary of his discussions with Rubin to Neal Civjan, who was Sun’s VP of Worldwide Software Sales at the time. Gupta wrote Civjan, along with his summary of the various different payment terms: “The make it or break it number from Google is \$28M for 3 years, no revenue share. Alan has approved it.”<sup>246</sup> Civjan responded: “Keep going on this with Alan. Lets [sic] discuss when I return.”<sup>247</sup> Gupta’s testimony confirms that there was no final weigh-in by Sun management with respect to the final terms of any agreement, and it is my opinion that it is therefore incorrect to conclude that the parties would have agreed to a \$28 million payment without any revenue share.

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<sup>243</sup> GOOGLE-01-00056540 at 549-50.

<sup>244</sup> GOOGLE-01-00056540 at 553.

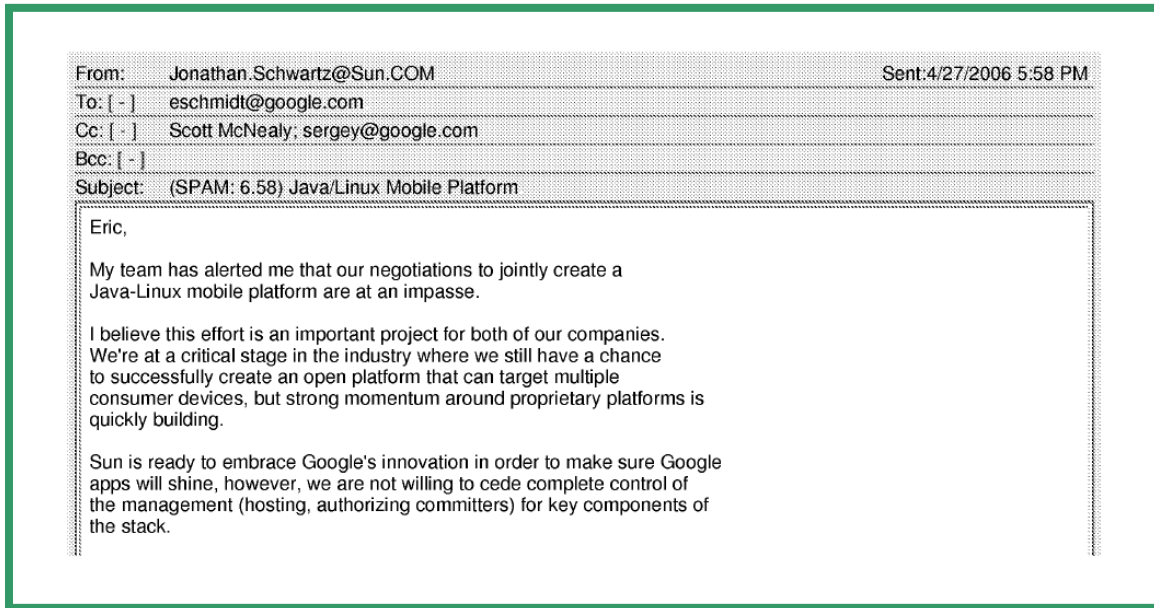
<sup>245</sup> GOOGLE-01-00065722 at 722.

<sup>246</sup> OAGOOGL0001338191-193 at 193.

<sup>247</sup> OAGOOGL0001338191-193 at 193.

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214. In late April 2006, the discussions reached an impasse, but then continued between the CEOs of Sun and Google. On April 27, 2006, then Sun CEO Jonathan Schwartz wrote Google CEO Eric Schmidt:<sup>248</sup>



215. On May 1, 2006, Schmidt replied: “I am okay with each party hosting and management their own contributions” but that “Google should have the final say as to which Sun technology is contributed to the open platform since Google is writing the check. In the absence of a payment from Google to Sun I could imagine a much more equal role for Sun.”<sup>249</sup> Rubin then followed up to set up a meeting to “hash this out and get the deal back on track.”<sup>250</sup> These emails again confirm that the draft agreements do not reflect any final agreement as to any terms.

216. Other documents produced in this case suggest that Sun believed that the alternative to a reaching a final agreement with Google would be that Google would still need a license. On April 25, 2006, Gupta wrote Alan Brenner: “if they want to ship what

<sup>248</sup> GOOGLE-66-00000274-274 at 274.

<sup>249</sup> GOOGLE-01-00025699-699 at 699.

<sup>250</sup> GOOGLE-01-00020132-133 at 132.

platforms. However, due to data availability, I am only able to quantify the direct benefit that Google receives from the Android platform – the ad revenues it collects from displaying ads on Android devices, the hardware revenues it receives from selling Nexus line of phones, and the revenues it receives from customers buying applications through Google’s Android Market store.

467. Exhibit 22 presents this calculation. Google’s revenues are \$823.9 million through 2011. Google is projected to earn an additional \$1.2 billion in Android-related revenues through 2012. These amounts represent infringer’s profits, or Google’s unjust enrichment, to which Oracle is entitled.

468. I understand that the relevant provision of the Copyright Act provides that Google, not Oracle, bears the burden of subtracting out Google’s deductible expenses as well as any profits attributable to features other than the infringing works. I have therefore not calculated Google’s costs or profits attributable to factors other than the infringement. If experts retained by Google offer opinions or analyses on either of these matters, I expect that I will be asked to evaluate those opinions or analyses and respond.

### **C. Actual Damages**

469. I understand that actual damages compensate for demonstrable harm to the plaintiff caused by the infringement.<sup>635</sup> I also understand that actual damages may be determined by the loss in the fair market value of the copyright, measured by the profits lost due to the infringement or by the value of the use of the copyrighted work to the infringer.<sup>636</sup> I understand that typically, impairment of market value is established by demonstrating lost sales or other profits that the licensee would have received “but for” the infringement, but that a fair market value retroactive license fee is also available as a measure of actual damages—in other words, “what a willing buyer would have been


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<sup>635</sup> *Oracle Corp. v. SAP AG*, 734 F. Supp. 2d 956, 970 (N.D. Cal. 2010).

<sup>636</sup> *Polar Bear Productions, Inc. v. Timex Corp.*, 384 F.3d 700, 708 (9th Cir. 2004).

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demonstrates that some portion of its Android revenues are attributable to factors other than its infringement, there may not be any possibility of double-counting. I will address any possibility that actual damages include some portion of infringer's profits once Google has offered evidence on this issue.



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Iain M. Cockburn

September 12, 2011

*(Revised September 15, 2011)*